



P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

First Semester, B.E. - Semester End Examination; Dec. - 2019

Basic Electrical Engineering

(Common to All Branches)

Time: 3 hrs

Max. Marks: 100

Note: i) **PART - A** is compulsory. **Two** marks for each question.

ii) **PART - B:** Answer any **Two** sub questions (from a, b, c) for Maximum of **18 marks** from each unit.

Q. No.	Questions	Marks
I : PART - A		10
I a.	Define Peak factor and its value for sinusoidal alternating current.	2
b.	What are the causes of electric shock?	2
c.	Justify the employment of D.C. shunt motors for driving lathes.	2
d.	In transformer, Iron loss remains constant and copper loss is variable. Justify.	2
e.	What are the features of Brushless DC Motor?	2
II : PART - B		90
UNIT - I		18
1 a.	Derive the expression for the power in series R-L circuit. Draw the related waveforms.	9
b.	A choice coil takes a current of 2 A, lagging 60° behind the applied voltage of 200 V at 50 Hz. Calculate the inductance, resistance and impedance of the coil. Also determine the power consumed when it is connected across 100 V, 25 Hz supply.	9
c.	Define power factor and its significance. Write short notes on;	
	i) Apparent power	9
	ii) Real power	
	iii) Reactive power	
UNIT - II		18
2 a.	Derive an expression for Line Voltage and Line current in three phase delta connected load. With neat circuit, explain three way control of load	9
b.	How does the fuses are rated? What are the requirements of fuse? How fuses are classified? Mention the advantages and disadvantages of Fuse.	9
c.	How electric shock is caused? What are the precautions to be taken to prevent electric shocks? What are the remedies to be taken if a person has received an electric shock?	9
UNIT - III		18
3 a.	Explain in detail types of D.C. motors and their representations.	9

- b. A 4 pole lap wound shunt generator delivers 200 A at terminal voltage of 250 V. It has a field and armature resistance of 50 Ω and 0.05 Ω respectively. Neglecting the brush drop, determine;
- i) Armature current 9
 - ii) Current per armature parallel path
 - iii) emf generated
 - iv) Power developed
- c. Mention the different types of synchronous generators and explain the constructions of each type with relevant diagrams. 9

UNIT - IV

18

- 4 a. In a 25 kVA, 2000/200 V, single phase transformer the Iron and full load copper losses are 350 and 400 W respectively. Calculate the efficiency at unity power factor at,
- i) Full load 9
 - ii) Half full load
- b. Explain the concept of Rotating magnetic field in three phase induction motor. 9
- c. With usual notation, derive an expression for the induced EMF in the single phase transformer and define the term transformation ratio. 9

UNIT - V

18

- 5 a. Explain the construction and working of BLDC motor. Mention its applications. 9
- b. Mention the types of Servomotor. Explain the function of two-phase AC servomotor, with neat schematic diagram. 9
- c. Explain the construction and working of capacitor-start induction motor. 9

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